

thought the Hainan bird peculiar; but on looking through my Amoy series, I find that the adult in winter plumage, while it has the crown and lores mottled, has a black patch from the rictus to the ear-coverts. In a bird shot in March, with a bill much deeper red, this black has nearly disappeared, and the crown is much blacker; and, lastly, in another in full nuptial dress the white has returned to the space from the nostril backwards, as in a European specimen, kindly lent me for comparison by Mr. Cooke. This settles my doubt as to my supposed novelty, and adds a little information as regards the change of plumage in the true *S. caspia*.

170. *STERNA MELANAUCHEN*, Temm.

On the rocks near Hoehow.

171. *SULA FUSCA*, L.

On the 15th of February, up the main river near Tinggan city, I watched a Gannet soaring overhead. It was a clear sunny day, and I could see plainly that the bird was of this species.

172. *GRACULUS CARBO* (L.).

On the 28th of March, at Haosuy (W. Hainan), we saw a large party of Cormorants fly past. They looked like the ordinary species, which is the commonest one during winter in South China. Mr. Gould has shown me one of the same in full plumage received from Siam.

From the above list it will be seen that the avifauna of Hainan resembles more that of South China than one might expect in so low a latitude. It has, however, a close affinity to that of the Tenasserim countries; and only a few species seem to connect it with Formosa. I originally intended to discuss this subject in detail; but my materials are, perhaps, too scanty.

XXV.—*The Natural History of Quiscalus major*.

By ELLIOTT COUES, M.D., United-States' Army.

ALTHOUGH this bird is very abundant in some parts of the United States, its habits seem not to have been sufficiently in-

vestigated, and may be said to remain comparatively unknown. The several accounts that have been published are not entirely accurate, or else are imperfect and otherwise unsatisfactory. Mr. Ord's paper (one of the earliest) transposes names, and is deficient in some respects. Bonaparte wrote a short notice to accompany the figure in his continuation of Wilson's 'Ornithology,' but perhaps never saw the bird alive; his observations on its habits are not entirely pertinent. Nuttall's article is compiled, almost copied, from this source, and gives nothing new. Audubon's is in advance of the preceding, though still leaving somewhat to be desired. These being the principal, if not the only accounts of the habits of the species that have appeared, it has occurred to me that my facilities for studying the bird in its native marshes might be turned to account in correcting some errors that have been committed, and in completing, it may be, the natural history of the species.

The Boat-tailed Grackle (or "Jackdaw," as it is usually called) is one of several characteristic species* of the South-Atlantic and Gulf States. But though thus belonging to what is termed the "Carolinian Fauna," it strays to the Middle States occasionally or frequently in summer, and in some instances, it is said, even to Southern New England†. Still it is not abundant, nor even common, beyond the Carolinas. In the other direction it has occurred as far south as the mouth of the Rio Grande‡, being associated in Texas with the larger *Q. macrurus*, that seems to replace it beyond this region. It is, moreover, a maritime species, almost entirely confined to the immediate vicinity of the sea-coast; so that its range is seen to be unusually restricted, and to be represented only by a narrow belt that follows the shore-line from Texas nearly, or quite, to the Middle districts. Those authors, we think, are wrong who say, without qualification, that it passes beyond the United

* *E. g.*, among land-birds, *Sitta pusilla*, *Protonotaria citræa*, *Helminthus swainsoni*, *Helminthophaga bachmani*, *Dendræa dominica*, *Collyrio ludovicianus*, *Cyanospiza ciris*, *Peucea æstivalis*, *Antrostomus carolinensis*, and *Picus querulus*.

† *Cf.* Coues, 'Birds of New England,' p. 37, upon the authority of Allen and others.

‡ Baird, B. N. A. 1858, p. 555.

States in winter*; for while possibly a certain proportion of the whole number of individuals may do so, all unquestionably do not. We have no data for denying the affirmative here, but are in position to affirm this negative. Thus, even in North Carolina, not far from the northerly terminus of the species, it is a resident bird; we have observed individuals in every month, and, for the most part, at weekly or less intervals. Towards December, however, there is a material and very evident falling off in their numbers; they do not become plentiful again until the latter part of February; and it is probable that, during an especially cold season, they may disappear for a short time. The weather, as affecting their means of subsistence, mainly determines their movements; for, like all their allies, the Jackdaws are true migrants, and there is always a north-south swaying of the greater number of them in spring and fall; while, at the same time, it is doubtful whether any localities within their usual range are incapable of affording a supply of suitable food at any season; and this is what mainly or wholly determines their presence or absence.

Except at the approach of, and during, the breeding-season, the sexes mostly keep in separate flocks, though they may often be temporarily thrown together. The males appear to usually follow the females and young birds in their migrations, more particularly in passing southward in the fall. After the greater number of individuals have left, many hardy males in fine plumage may be seen for some time; it is generally these that are to be observed in winter in North Carolina. It might be expected that at the spring migration these more vigorous birds would lead the van; but, as a matter of fact, flocks of the females, readily distinguished by their small size and brown colour, are commonly the first indications of the coming northward of the great body of the birds.

We have no occasion to give the description of a bird so well

* Thus Bonaparte, for example:—"About the latter end of November they leave even the warm region of Florida to seek winter-quarters further south, probably in the West Indies." It is to be presumed that some of the similar statements may have arisen from confounding the species with one of its near allies.

known as this ; but certain features, particularly in respect of changes of plumage, may be in place. The moult is double ; the plumage is renewed early in the spring, and again in autumn, as soon as domestic duties are finished *. The change begins on the head and fore parts of the body, and proceeds regularly backward. Thus we have shot specimens early in April not to be surpassed in the brilliancy of the hues of the head, body, and wings, which were freshly feathered, yet with faded and evidently well-worn rectrices. When in full plumage, the tail is a most conspicuous feature ; in size this is intermediate between that of *Q. macrurus*, and of *Q. versicolor* : it is highly lustrous, with a rounded (not cuneate) outline, and shows the peculiar upward slant of the lateral rectrices, which leaves the middle pair to represent the keel of a boat, whence the trivial name†. At this season the beautiful metallic gloss and iridescence of the plumage rivals in intensity that of *Q. versicolor* itself, though the tints, as is well known, are quite different. The iris is a clear pale straw-yellow ; the bill and feet are ebony-black. The fresh feathers of the full moult are hardly inferior in beauty to those of spring. The female might easily pass for another species, lacking, in great measure, the unusual development of the tail, and being as much smaller, comparatively, in other dimensions : while a perfect male may measure 16 inches, or even a little more, a female in equally full plumage may fall short of 12 inches. She is brown, paler, and somewhat greyish below, with a shade of greenish-black (nearly "invisible green" sometimes) above, and especially on the wings and tail. Her eye is pale yellow, like the male's. The young have brown irides, which gradually change to yellow, a case parallel with that of some or many Hawks. When the young first leave the nest, they are clear warm brown above and pale grey below, almost white on the abdomen ; the naked space about each eye is large ; there is a tuft of fluffy down upon the head—remnant of what had covered the whole body. This tuft shortly disappears ; and the colours

* It should be borne in mind, especially regarding dates, that reference is had, in all instances, to observations made in North Carolina.

† And probably also, in case of allied species, the technical word *Scaphidura*.

rapidly change, especially on the males, in which the brown gives way to blackish upon the back, wings, and tail, and the grey underneath to brown like that of the head. During the progress of the moult (more particularly on the face) some curious stages may be found. Besides having new glossy black feathers interspersed among the old faded brown ones, these latter may, upon the head and underparts especially, turn white; then the birds are black and brown, with a whitish head and a well-defined white stripe continued from the throat along the middle line of the breast and belly. This singular condition has apparently not been noticed*. By the end of October the moult is finished; the old birds are in full winter plumage, and the young have gained their first complete dress.

In the spring, as soon as those birds which went south return, the sexes, no longer discrete, come together in flocks to roam at large for a while over the marshes in company with great numbers of the Redwings (*Agelaius phœniceus*). Their hoarse voices resound from every reed-patch, where the flocks are feeding half concealed, and are borne upon the air from every quarter as the dusky troops wheel overhead in solid phalanx, executing sudden and unaccountable evolutions as if guided by some single commanding spirit. Now hovering uncertain, then dashing impulsive, now veering in an instant, then taking a long steady flight towards some distant point, more unstable, vacillating birds cannot be found. This is after a certain time in April, varying with the advancement or retardation of the season, before which they had been comparatively quiet; the sexual impulse is daily growing stronger, and is manifested by increased restlessness and impatience. The flocks break up into loose straggling companies, which rapidly become indifferent to each other's society, and at length the pairing is accomplished. During this transition state (this periodic recurrence of puberty that with birds is perennial) the Daws' voices crack like any youth's, and they utter a curious medley of notes from *bass* to *falsestto*, notes that are certainly unmusical to any ears but those for which they are intended. The jingling jargon is indescri-

* I have seen much the same thing in the case of *Xanthocephalus icterocephalus* in New Mexico in August and September.

bable ; doubtless even Nuttall, with ear attuned to the feathered orchestra because his heart was in accord with his favourites, could have made nothing of such " sounds inharmonious in themselves and harsh." The nuptials over, the birds suddenly forsake the open marshes, where before they roamed at will, and gather in small companies about the thickset bush-clumps that hedge in the reedy waste, to assume more serious parts. Their sociability at this time may result partly from gregarious instincts, probably never wholly suppressed, partly from similarity in choice of the comparatively few entirely eligible breeding-places. Thus a dozen or a score of pairs may occupy a thicket only a few rods across ; and these, moreover, share proprietorship amicably with their friends the Redwings and their familiar acquaintances the Green Herons (*Butorides virescens*). Such a breeding-place (to select one from the many I have visited) looks from the outside like a solid mass of foliage with never a nest in sight ; but if one creeps inside and looks upward, he has a different view. A close canopy of green shuts out the blue one beyond ; leafy twigs are matted together and intertwined with a network of vigorous vines ; the Herons have slung their platforms, like hammocks, in the midst of the swinging trailers ; while in the forks and crotches of the shrubbery, or in the meshes of the contorted creepers, are placed the nests of both kinds of Blackbirds, sometimes so thickly that half a dozen may be within arm's length. On such an occasion as I attempt to portray, the Herons will flap off, in as great haste as their natural indolence allows, in perfect silence or with feeble remonstrance, and perch upon neighbouring outposts, on the watch, stiffly erect, like statuesque caricatures, showing their ungraceful shapes to the least advantage. The impulsive Redwings will betray their emotion, hovering dismayed with anxious cries, or alighting only to take instant wing again. The less passionate, if not less troubled, Boat-tails have already slunk quietly off with scarcely a note to tell their whereabouts ; nor will they return until they think the field is clear. This is especially so with the females : the males may be more solicitous ; but, unlike the Redwings, they generally take care to keep at a safe distance. It is to be feared, indeed, that they are not over-attentive or faithful part-

ners ; for while their mates are incubating, they may commonly be seen feeding by themselves in the marsh ; and it is doubtful whether they either bring food home or take their turn about at the nest. In fact, they seem to have forgotten the lively interest they felt in domestic concerns while their throats were swollen with an epithalamium.

The nest of the Boat-tail is a strong, substantial, and rather bulky fabric, but neither tasteful nor elegant, seeming as if built solely for use, without thought of the ornamentation that many more æsthetic birds take delight in bestowing upon their home. It is composed chiefly of interlaced twigs and intertwined grasses, rushes, or strips of fibrous bark or roots, with a few dried leaves for filling or lining ; none of the many I have examined contained any hair, moss, or mud. The thickness and irregularity of the walls make the structure look unusually large, as compared with its internal dimensions ; the special contour is chiefly determined by the site. When a nest is hung in a lacement of vines, it is looser and more irregular than when saddled upon a fork. The cup is usually rather deeper than broad, and has a well-defined brim, the materials being there more closely interwoven.

With these birds the laying-season is at its height during the latter part of April and beginning of May ; this is the best time for taking the eggs, as most of the nests have received their complement, and incubation is only just begun. I have found in no instance more than six or fewer than three eggs in a nest ; five and six are the usual numbers. They measure 1.25 in. by about .8, being thus rather narrowly elongate ; the smaller end is obtuse. They are not "whitish, spotted with dark brown," as Bonaparte and Nuttall state. The ground-colour is pale dull bluish-green, usually somewhat clouded with dull pale purplish, this tint being most noticeable where the markings, to be presently described, are thickest, and having an appearance of being washed out of the latter. The markings are curiously—even fantastically—distributed over the whole surface, but are commonly most numerous at or towards the larger end. These are of two kinds : one is a set of sharply-defined splashes, spots and dots ; the other consists of fine-drawn irregularly waved or

zigzag lines ; both are dark brown, sometimes almost black, but with a barely perceptible purplish tint. Other of each of these kinds of markings are obscure, seeming as if below, instead of upon, the surface. The line-tracery is far more abundant than the spotting, and mainly makes up the peculiar *pictura* of the egg, which singularly resembles some kinds of clouded dark-veined marble. Some of the lines wander vaguely over the surface unbroken for a long distance ; others are tangled in skeins, or tied up in knots, or coiled like cordage in miniature ; and no two eggs are alike in these respects. The earliest young appear late in May ; but the coming generation is not generally noticed until the latter part of June. Probably two broods are, as a rule, reared in each season ; and from the common circumstance of finding newly-fledged birds in September, it is to be inferred that three are not infrequently reared. For a little time before they essay on wing outside their leafy covert the young content themselves with scrambling about the vines near the nest, calling loudly for the food that it must be much labour to bring. Some time in August nearly all of both old and young birds are in flocks foraging over the marshes.

I am familiar with the general habits of all our well-founded* species of *Quiscalus* except *Q. macrurus*, which I have not seen alive ; and brief reference to some of their distinguishing features may make certain special tracts of the subject of the present article appear more prominently in the sequel.

Without exception, all our "Blackbirds" (of the genera *Agelaius*, *Xanthocephalus*, *Scolecophagus*, and *Quiscalus*) are eminently gregarious at most seasons ; but the strength of this "instinct of concentration" wanes with some during the breeding season, while it scarcely abates with others. As instances of the first-mentioned condition, we may cite the *Agelaii*, best represented by the common *A. phaniceus*, which ranges over the whole United States. This species is a regular migrant ; most individuals pass in spring to breed in or near the northern portions of the Union. At the mating-time the flocks break

* *Q. aglæus*, Bd. (= *Q. varitus*, Bd. olim, nec auct. ex Florida) and *Q. æneus*, Ridgway, from the Mississippi would be held by some for extremes of form of *Q. versicolor* (sive *purpureus*).

up and pairs scatter everywhere—every low meadow, moist briary tract, and reedy fen having one or more. So it is, also, with the two Pacific coast-species, *A. tricolor* and *A. gubernator*; but these, on account of their limited range and of the comparative scarcity of suitable breeding-places, are more crowded together, as it were, while breeding, and thus probably never wholly forsake the society of their kind. These three are “marsh” Blackbirds proper: they gather in countless numbers in the fall, and are found wherever reeds and rushes grow, fattening on the nutritious grain; *A. phæniceus* recognizes no bounds but those that are “writ in water.” They are mostly granivorous; insects form a large part of their food only while they await the ripening of a bountiful harvest.

X. icterocephalus is not far removed from the *Agelai*; but it tends toward the group I shall next notice, and in a measure represents the Purple Grackle of the eastern province in the western regions. It is the Blackbird of the prairie; we first meet it on the edge of the treeless country at the eastern limit of the central plateau; it seems one of the most trustworthy land-marks set up all over the grassy sea. It is always gregarious—quite as distinctly so during the breeding-season as at other times. I found it breeding in colonies in the marshes of New Mexico in June. It is perhaps less decidedly migratory than most of its allies.

The *Scolecophagi* are more independent of water than any of the others. Our two species exactly replace each other in respectively the eastern and the middle and western provinces. But there is a notable difference in their latitudinal dispersion. *S. ferrugineus* is more northern; it is rarely, if ever, seen in the United States in summer, as it passes beyond our limits to breed. I found it breeding in Labrador in July; it was not then in flocks nor even in companies, but scattered over the country in pairs or families, which seemed to have settled at random among the stunted conifers or other shrubbery that hides the mossy oozy ground. It “makes up” in flocks in August, and in this condition passes southward to winter. It visits ploughed fields, meadows, and pastures, spends much of its time on the ground, and, in the matter of food, seems to merit its technical

name. *S. cyanocephalus* is southerly; it returns to Mexico in winter. The summer is spent in the United States, where it arrives in flocks, which break up on reaching their destination, to breed*. It likewise is quite independent of water†, and in other respects is the counterpart of *S. ferrugineus*. Both these water-freed species, it should be observed, lay plain-spotted eggs, more resembling in *pictura* (though not in tint) those of the agrarian Starlings (*Sturnella*) than the singularly-limned ones that all our lacustrine and maritime species lay.

Turning now to *Quiscalus*, we find in this genus alone species that exhibit some of the leading characteristics of each of the other genera and have one superadded feature. The commonest example of the genus, *Q. versicolor*, corresponds in latitudinal range with *A. phæniceus*, breeding in eligible situations in the United States but not beyond—in longitude with *S. ferrugineus*, being restricted to the eastern province. Like the last, it is in the greatest measure independent of water, frequenting cultivated districts at a season when its depredations are most felt and most injurious to the agriculturalist; its scoleophagous nature, however, is not the less real because less conspicuous. It breeds, for the most part, in colonies, like the Yellow-headed Troopial; it may choose for a nesting-place trees that need not be near water. In restriction of geographical range alone, *Q. major* corresponds with the two western *Agelai*; in other respects, it is more widely differentiated from any of the birds we have considered than these are from each other. We have particularly to notice, then, what special modifications‡ appear as a consequence of its decidedly maritime conditions.

The Boat-tailed Grackle is preeminent in its family by its aquatic disposition; this is as well marked as it is in many or most *Limicola*. Besides feeding among the swaying reeds, upon

* The breeding-range of this species, as compared with that of its congener, corresponds with that of the western *Eremophila*, as compared with *E. cornuta* proper—and to the southward extension of certain prairie *Plectrophanæ*, as compared with *P. nivalis* and others.

† Thus I found it abundant in spring and fall on the pine-clad mountains of Arizona.

‡ Probably also shared by *Q. macrurus*, which seems to be the southward continuation of this maritime Blackbirdism.

the seeds of these plants, it descends to the sand-bars and mud-flats that the tide lays bare, and seeks, in the guise of a grallatorial bird, in company with Tattlers and Sandpipers, food to which most Blackbirds are strangers. As a rule, *Icteridæ* are tenacious of insectorial traits; one of which is to hop when on the ground, instead of bringing forwards each leg alternately; but the Boat-tail almost always walks. It would hop at a disadvantage in the softy oozy mud where most of its time, when it is not on wing, is spent—at a still greater in the shallow water, where it often wades. Its long strong legs are as well fitted for progression under these circumstances as its broad fan-shaped tail is for a balance when on bending rushes. However much grain it may gather from the bursting glumes of the reeds or glean from the ground below, however many soft corms of bulbiferous plants it may wrench up with its strong bill, the greater part of its food is of an animal nature. It feeds indiscriminately upon worms and little aquatic creatures of all sorts, particularly small mollusks and articulates*. A flock descends with raucous cries to a mud-flat where a region of those singularly unsymmetrical little crabs called “fiddlers” (*Gelasimus pugnator*) are hurrying to and fro in eager quest of food. Each bird marks its prey, breaks in a carapace at a blow, picks off the one great claw, too large for its throat, and swallows the body with the lesser legs still wriggling. They skurry to a bank of raccoon-oysters that just breaks the surface of the water, and feed eagerly upon the youngest ones, whose shells are still frail and delicate, as well as upon young mussels (*Modiola plicatula*), that lie anchored by the byssus to the rougher bivalves. They swoop down to a pool left by the retiring tide, where innumerable shrimps are disporting: these meet with like fate; for the birds wade boldly into the water, run nimbly about, up to their bellies, striking here and there, and at each blow transfixing an unlucky invertebrate. That they catch fish I cannot affirm, though I should not be surprised to learn that they did so. If

* Compared with other Blackbirds, the difference in diet is like that of *Corvus ossifragus* as distinguished from *C. americanus*, of *Procyon cancrivorus* as from *P. lotor*, and so forth. The specially littoral representatives of most inland genera furnish many such instances.

not, this is almost the only point wherein they differ in their food from the Rails and the Herons and other true waders with which they are thrown into intimate, if temporary, association and alliance. It has been to me a never-failing source of interest to watch these wading perchers, so truly aquatic in habit, brought into such close relations with birds to which they have no affinity; and watching them would bring unbidden the reflection, how beautifully Nature, in her wise economy, causes seemingly fortuitous circumstance to mould her few great types into many different shapes, to bend her few great aims to unnumbered purposes, to resolve her essential unity into endless diversity!

Fort Macon, North Carolina,
February 1870.

XXVI.—*On rare or little-known Limicolæ.*

By JAMES EDMUND HARTING, F.L.S., F.Z.S.

(Plate XI.)

[Continued from p. 213.]

I PROPOSED in my last paper, for the sake of convenience, to divide the rufous-breasted Plovers into two groups—those which in structure and habits resemble the Dotterels (*Eudromias*), and those whose affinities are with the Shore-Plovers (*Ægialitis*).

Having disposed of the former, I now proceed with the latter, and will try to bring together materials for a complete history, so far as possible, of the remaining two species, *Æ. geoffroyi* and *Æ. mongolicus*, whose general resemblance, as I before mentioned, both in summer and winter plumage, has led to their being frequently confounded.

5. *ÆGIALITIS GEOFFROYI.*

Charadrius asiaticus, Horsfield, Trans. Linn. Soc. xiii. p. 187 (1820); Tristram, P. Z. S. 1864, p. 450, *et* Ibis, 1867, p. 93 (*nec* Pall.).

Charadrius geoffroyi, Wagler, Syst. Av. fol. 4, p. 13, no. 19 (1827); Kittlitz, Kupfert. Vög. p. 26, pl. 34, fig. 2 (1833); Blyth, J. A. S. B. xii. p. 180 (1843); Heuglin, Ibis, 1859, p. 345; E. Newton, *op. cit.* 1863, p. 455, *et* 1866, p. 343; Blyth, *op. cit.* 1865, p. 34.